

HEALTH PHYSICS ANALYSIS

The licensee has just begun that portion of his program which may lead to ~~Lead~~  
~~and source~~ <sup>radiation</sup> ~~problem~~. This part of the program involves drying  
and loading of the source material residues with the potential condition  
of airborne contamination. The licensee representatives advised now that  
they are getting their drying and loading operation <sup>under way</sup>, their health physics  
consultant firm will be in their air sampling and miscellaneous survey pro-  
gram. The licensee recognizes the condition of blowing dried residues on  
windy days when conveyor belts are uncovered. They are planning to design  
a cover for the conveyor belt for this particular part of the operation.  
In addition, the operator which is closest to the loading operation at the  
rail car has been issued a respirator and goggles. In the first six months  
of operation <sup>(average 8 with loading)</sup> of this particular project site, the highest whole body  
exposure received during the six month period has been 90 millirem. It  
is the opinion of this inspector that the licensee's representatives at  
the project site are very conscientious insofar as health and safety  
matters are concerned, and that they are anxious to get the job completed  
while doing it in a safe manner.

REPORT DETAILS

GENERAL INFORMATION

9. This was an announced reinspection of this source material license conducted on March 27, 1968.
10. Dr. E. A. Fulgrabe, State of Missouri Department of Public Health, was notified of this forthcoming inspection on March 26, 1968. No member of that organization accompanied the inspector.
11. Mr. Paul Geary, an employee of the Arrow Road Construction Company, Mt. Prospect, Illinois, was interviewed during the inspection of the licensee's material site at 9200 Latty Avenue, Hazelwood, Missouri. Mr. Geary represents the Commercial Discount Corporation at this Hazelwood, Missouri site, and has a title of Superintendent. Also present during the inspection was Mr. David Brooman, an employee of the Ryckman, Edgerley, Burbank, and Associates, consultant firm. *(in English, speaking, etc)*
12. Mr. Joe Mauger, Division Credit Manager, Commercial Discount Corporation, is now handling this project. Mr. Mauger was telephoned following this inspection and given the results of the inspection.

INSPECTION HISTORY

13. In the spring of 1966, the Continental Mining and Milling Company, 109 South LaSalle Street, Chicago, Illinois, purchased from the AEC ore residues which were stored at the St. Louis Airport. Movement of this material from that site began on or about May 1, 1966, to the Continental Mining and Milling facility at 9200 Latty Avenue, Hazelwood, Missouri. During this material move, two visits were made by representatives of Region III; May 16 and 17, 1966, and August 4, 1966. At that time, Continental Mining and Milling Co. possessed license No. SMA-862.
14. In January 1967, the Commercial Discount Corporation took physical possession of the Continental Mining and Milling Company facility and stockpile. These facilities and material were repossessed by Commercial Discount Corporation who had acquired a license to cover the storage only of this material, license No. SMC-807, issued on December 29, 1966. License No. SMC-907 was first inspected on January 11, 1967, and was considered the initial inspection of that program under that license. During the January 11, 1967 inspection, two items of noncompliance were noted. As a result of the ease of access through open windows of the production building, space under the locked gate,

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and a partially collapsed portion of the cyclone fence enclosed all areas, the inner stock pile and barrel storage areas were, in effect, unrestricted areas and the radiation levels from the stockpiles and barrel storage areas were such that if an individual were continuously present in the area, he could receive a dose in excess of 100 millirems in any seven days. During this inspection, it was noted that the cyclone fence was in good physical condition and that no spaces were available under the locked gates and, in general, the access to the restricted areas was well controlled.

15. Contrary to 10 CFR 20.203(b), signs bearing the radiation caution symbol and the words Caution or Danger, Radiation Area, were not conspicuously posted at locations around the stockpile area where radiation levels were such that a major portion of the body could receive in any five consecutive days a dose in excess of 100 millirems. It was noted during this inspection that an abundant supply of signs showing the conventional radiation symbol and the words "Caution Radiation Area" were conspicuously posted at many locations throughout the stockpile area.

PROGRAM

16. Prior to June 28, 1967, the Commercial Discount Corporation was authorized to hold and store only 125,000 tons of residues containing uranium and thorium source material under this license. Item 6 of License No. SMO-907 was amended on June 28, 1967, to allow the licensee to condition the source material by drying to 15% moisture content loading the material to rail cars and shipping the material to ~~Canon City, Colorado~~ <sup>Corral Gordo, Arizona</sup>. In support of this license amendment request, the licensee advised that a consulting firm, (please see paragraph 11 above) would perform various surveys and sampling of the drying and loading operation on a bi-weekly (twice per month) frequency once the program began. On March 11, 1968, Mr. Joe Hanger the Commercial Discount representative, telephoned Region III and advised that the drying operation on the uranium ore residue in Hazelwood, Missouri would begin on Monday, March 25, 1968. During this telephone conversation, Mr. Hanger advised that a good deal of the residue has already been moved from the site to Colorado.

17. An inspection visit of the licensee was conducted on Wednesday, March 27, 1968. Mr. Pat Geary, the Hazelwood site attendant, advised that they have been trying to get the drying operation "in gear" for quite some time, but have just now been successful. The use of a drying method is important because of the very high cost of shipping the wet material to Colorado. Mr. Geary advised that the drying operation reduces the moisture content of the material from 46% to 17% approximately. Mr. Geary advised that after receiving Amendment No. 1 to this license, approximately 12,000 tons of various types of material were shipped in the wet condition to the Colorado site. This material included C-slag, unleached barium sulfate, barium sulfate cake, and some Colorado raffinates.

18. According to Mr. Geary, the current material which is going <sup>first</sup> to the drying process prior to loading into railroad cars is the Colorado raffinates. Mr. Geary stated that he hopes to fill five-50 ton railroad cars daily.

19. The figure of 125,000 tons of residues as noted on the license is an approximate quantity number. When previously questioned on this matter, the officials of the Continental Mining and Milling Company had stated that the dry weight of the residue was ~~found~~ to be considerably less than number, possibly around 75,000 tons. In addition, if the wet weight were to be considered, they stated that it would likely be considerably higher than this number of 125,000 tons which was accepted <sup>from</sup> the Commission during the original purchase talks.

20. Geary stated that each of the railroad car bottoms are sealed from the inside with polyethylene strips. The polyethylene strips are tack pointed into the seams on the inside of each of the cars. When a railroad car has been filled <sup>the</sup> material is sprayed with a plastic known as Aerospray 52 Binder which is a water emulsion of a synthetic resin. This material is produced by the American Cyanamid Company Explosive and Mining Chemicals Department, Brown Brook, New Jersey. According to Mr. Geary, a second <sup>application of the spray is given</sup> to the load after a two-hour drying period.

#### DISCLOSURES AND ADMINISTRATIVE CONTROL

21. The president of Commercial Discount Corporation is Mr. A. R. McPherson, Jr. The Commercial Discount Corporation representative handling this inspection has been Mr. Joseph Mauer.

22. The Commercial Discount Corporation has a working agreement with the Arrow Road Construction Company, Mt. Prospect, Illinois, to handle all of the materials under this license. According to Mr. Mauger, Mr. Pat Geary of the Arrow Road Construction Company, is the licensee's Hazelwood site superintendent. Mr. Geary resides at the plant site. The office building which is located immediately outside of the restricted fenced in area is equipped with adequate living quarters. Mr. Geary stated that times when he is not actually at the site, local police are asked to pay closer attention to the project than normal.

#### FACILITIES AND EQUIPMENT

23. The Norfolk and Western Railway Company industrial map, included in the backup material for the Continental Mining and Milling (CMM) Company license, indicates the licensee's facilities are located on a 3.5 acre plot of ground which CMM purchased from the Busy Bee Material Service Company and 7.5 acres which they leased from the Norfolk and Western Railway Company. This plot is located at 9200 Latty Avenue, Hazelwood, Missouri, where Latty Avenue descends to the Cold Water Creek. A spur line from the Norfolk and Western Railway Company bounds the licensee's facility on the west between the licensee's facility and Cold Water Creek. The buildings of the licensee's facility are located on the 3.5 acre plot which was originally owned by CMM and the material is stored on the 7.5 acre lot which CMM leased from the Norfolk and Western Railroad Company.

24. The licensee utilizes four buildings. One of these buildings is a permanent five room three room building located on the north portion of the site. This building is used as an office building (and Mr. Geary's living quarters are located here) and is located outside of the fenced in area. Directly south of the office building is a metal fabricated building used primarily as equipment and vehicle storage. This building is located within the fenced in restricted area with the north edge of the building being a portion of the fence line. Located to the southeast of the office building, to the northeast of the storage building is a smaller metal building used for miscellaneous equipment storage and locker room and shower facilities for employees. This particular smaller building is located outside the fenced area with the south and east walls of the building being a portion of the



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fence line. Directly to the south of the vehicle storage building is a very large building (about four times larger than the vehicle storage building). It is within this building that the licensee has his drying equipment.

25. This drying equipment consists of three main parts. They are a natural gas fired (20,000 cubic feet of gas per hour) Barber-Greene Model 836 dryer, a Barber-Greene Model 856 dust collector, a Model CM70 wet scrubber utilizing a recirculated water system. The licensee has dug two large holes directly south of the drying operation. One of these holes is lined with a plastic sheet and is used as a settling pond for the freshly scrubbed drying exhaust, a small trench connects this settling pond with a second pond from which water is drawn and recirculated through the system. Other auxiliary equipment includes two pieces of earthmoving equipment and conveyor belts to allow movement of material from one point of the operation to another.

OBSERVATION OF OPERATIONS

26. A load of the material is brought into the large building in one of the earthmoving pieces of equipment where the material is <sup>dumped</sup> fed onto a conveyor belt and is transferred to the top of the drying unit. The material is allowed to enter a large inclined rotating cylinder and as it falls down to and inside of the cylinder it is dried from its approximately 45% moisture content to a 15% moisture content. When it reaches the lower end of this rotating cylinder, it is picked up by another conveyor and brought outside of the building on southwest corner and loaded into open top railroad cars. Barring any interruptions such as those caused by rocks or other foreign materials jamming the equipment, this is a continuous operation from the time the loader vehicle brings the material into the building and dried material is put into the cars. The approximate particle size of the newly dried material appears to be somewhat like sand or cinders.

Warning and Labeling

27. The licensee has numerous signs posted throughout the area including on the material piles throughout several locations on the fence surrounding the entire area. Each of the signs showed the conventional radiation symbol in the colors of orange on yellow and either "Caution Radioactive Material" or "Caution Radiation Area."

28. Stenciled on each of the railroad cars, which were observed, was a sign stating, "Last Contained Atomic Waste - Do Not Reload - When empty return to Agent N & N Railway, Robertson, Missouri."
29. A Form AEC-3, "Notice to Employees" was posted in the office building and in the locker and shower room ~~area~~ *building area*.

#### PERSONNEL MONITORING AND SURVEYS

30. In July, 1967, the licensee began utilizing the R. S. Landauer film badge service on a weekly exchange basis. There are a total of seven persons on this film badge program including Mr. Geary. A review of the film badge records maintained by the licensee shows that the maximum permanent whole body exposure received by any one person between July 1967 through January 1968 has been 90 millirems.
31. The licensee representatives stated that now that the drying and loading operations have begun, the various surveys including air sampling, water sampling, will begin during the first week in April 1968, and will be performed on a bi-weekly basis. This information was confirmed by Mr. Brooman a member of the licensee's consulting firm.
32. In the presence of Mr. Geary and Mr. Brooman, the AEC representative walked around ~~the~~ <sup>the</sup> perimeter of the licensee's facility to observe the condition of the fence at this time, since during the last inspection the fence was in poor condition in several places. During this walk, independent measurements were made by the AEC representative of the radiation levels outside the fenced area utilizing ~~the~~ <sup>an</sup> Eberline Model E-5005 survey meter. All areas showed a radiation level of approximately 0.5 mr/hr at 18 inches from the fence except for one location which showed 3 mr/hr at 18 inches away from the fence in an unobstructed area, which constituted noncompliance with 10 CFR 20.105(b), in that a person, if continuously present in the area, could receive a dose in excess of 2 millirems in any one hour or a dose in excess of 100 millirems in any seven consecutive days. In addition, the licensee representatives were advised that failure to make adequate surveys to determine the radiation levels at the perimeter of the fence constituted noncompliance with 10 CFR 20.20(c). The particular type of material causing the radiation level of 3 mr/hr at 18 inches away from the fence is a pile of barium sulfate (leached). Mr. Geary advised that he was of the understanding that this

32. (continued)

material was of very little value, and was, therefore, surprised to find a radiation level of 3 mr at that distance from the material. Since the fence line cannot be moved further away from this material, the licensee representatives indicated one corrective action would be to remove portions of the pile from the fence area to another location, that is, slice off part of the pile at that side and put it on the other side of the pile.

MANAGEMENT DISCUSSION

33. The results of this inspection were discussed with Mr. Pat Geary, the licensee's superintendent at this project site. Mr. Geary reiterated his earlier statement saying that the probable way of reducing the radiation level at the fence line around the barium sulfate pile would be to move part of the pile away from the fence. At this same time, Mr. Geary asked if there was a way they could get rid of approximately 1,000 barrels of miscellaneous junk material which could not be treated the same as the other source material which the licensee has. The AEC representative advised that a possible method of disposal was through a commercial disposal agency such as California Nuclear or Nuclear Engineering.

34. Mr. Joseph Mauger of Commercial Discount Corporation was telephoned on April 1, 1966, in his Chicago office and given the results of this inspection. Mr. Mauger stated that Mr. Geary had called him following the inspection and advised him of the items which were discussed during the inspection. Mr. Mauger indicated that the barium sulfate pile would be moved in order to reduce the levels of radiation at the fence line at that point. Also, Mr. Mauger stated that he would make sure his consultants perform adequate surveys each time they come to the site, every two weeks. During this telephone conversation with Mr. Mauger, the AEC representative advised that to be more meaningful the high volume air samples should be taken in the immediate vicinity of the drying and loading operations where the people are exposed in addition to the surrounding area air samples. This would include both inside and outside of the large buildings. Also, these samples should be taken downstream of the operation in the Cold River Creek to determine what contamination is going down the land into the creek.

It was noted that this region will contain an unmonitored area. The operation is located in Missouri, Missouri somewhere between now and the



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completion of their operations, probably in late summer or early fall. No advance notification would be given of this inspection. <sup>and that</sup> ~~that~~ During ~~this~~ inspection, the consultants' survey results will be reviewed to determine compliance with the Federal Regulations as well as standard radiation safety practices.

35. Regarding the two items of noncompliance noted above, Mr. Mauger was advised that he may expect to receive correspondence regarding the results of this inspection.